

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1, 3, 5-8 in accordance with the following:

1. (Currently Amended) An echo canceling system ~~provided in a full-duplex communication system, the system comprising:~~
 - an arrival time detecting portion ~~for detecting a respective echo arrival time of one or each of~~ plural echo paths, based on a reference signal and an echo signal;
 - a-pseudo-echo calculating filters ~~for calculating as many pseudo-echo signals as the detected arrival times, a number of the pseudo-echo calculating filters being equal to a number of the detected arrival times;~~
 - an adding unit ~~for overlapping the calculated pseudo-echo signals~~ as many times as the detected arrival times to obtain an overall pseudo-echo signal; and
 - a subtracting unit ~~for subtracting the overall pseudo-echo signal from the echo signal.~~
2. (Original) The echo canceling system according to claim 1, wherein the arrival time detecting portion calculates a correlation coefficient between the reference signal and the echo signal and detects a time difference as the arrival time in a case where the correlation coefficient is larger than a predetermined threshold.
3. (Currently Amended) An echo canceling system provided in a full-duplex communication system, ~~the system comprising:~~
 - a window multiplication/ and orthogonal transformation processing ~~portion-unit for~~ performing an orthogonal transformation processing represented by a fast Fourier transform for a predetermined window length based on a reference signal and an echo signal to obtain an amplitude spectrum and a phase spectrum of each of the reference signal and the echo signal;
 - an arrival time detecting ~~portion-unit for~~ detecting one or plural echo arrival times based on the amplitude spectrum of the reference signal and the amplitude spectrum of the echo signal;

a-pseudo-echo calculating filters ~~for~~ calculating as many amplitude spectra of pseudo-echo signals as the detected arrival times;

an adding unit ~~for~~ overlapping the calculated amplitude spectra of the pseudo-echo signals to obtain an amplitude spectrum of an overall pseudo-echo signal;

a subtracting unit ~~for~~ subtracting the amplitude spectrum of the overall pseudo-echo signal from the amplitude spectrum of the echo signal to obtain an amplitude spectrum of an echo canceling signal; and

an inverse orthogonal transformation/ ~~and~~ overlap processing ~~portion-unit~~ ~~for~~ performing an inverse orthogonal transformation processing based on the amplitude spectrum of the echo canceling signal and the phase spectrum of the echo signal, followed by an overlap processing, to obtain an echo canceled signal.

4. (Original) The echo canceling system according to claim 3, wherein the arrival time detecting portion calculates a correlation coefficient between the amplitude spectrum of the reference signal and the amplitude spectrum of the echo signal and detects a number of frames as the arrival time in a case where the correlation coefficient is larger than a predetermined threshold.

5. (Currently Amended) An echo canceling method to be applied to a full-duplex communication system, ~~the method~~ comprising:

detecting a respective echo arrival time of ~~one or each of~~ plural echo paths based on a reference signal and an echo signal;

calculating as many pseudo-echo signals as the detected arrival times, a number of the pseudo-echo calculating filters being equal to a number of the detected arrival times;

overlapping the calculated pseudo-echo signals as many times as the arrival times to obtain an overall pseudo-echo signal; and subtracting the overall pseudo-echo signal from the echo signal.

6. (Currently Amended) An echo canceling method to be applied to a full-duplex communication system, ~~the method~~ comprising:

performing an orthogonal transformation processing represented by a fast Fourier transform for a predetermined window length based on a reference signal and an echo signal to obtain an amplitude spectrum and a phase spectrum of each of the reference signal and the echo signal;

detecting echo arrival times of one or plural echo paths based on the amplitude spectrum of the reference signal and the amplitude spectrum of the echo signal;
calculating as many amplitude spectra of pseudo-echo signals as the detected arrival times;
overlapping the calculated amplitude spectra of the pseudo-echo signals to obtain an amplitude spectrum of an overall pseudo-echo signal;
subtracting the amplitude spectrum of the overall pseudo-echo signal from the amplitude spectrum of the echo signal to obtain an amplitude spectrum of an echo canceling signal; and
performing an inverse orthogonal transformation processing based on the amplitude spectrum of the echo canceling signal and the phase spectrum of the echo signal, followed by an overlap processing, to obtain an echo canceled signal.

7. (Currently Amended) A recording medium storing a computer-readable and -executable program ~~for to control the computer to perform realizing an~~ echo canceling method, to be applied to a full-duplex communication system, ~~the by: program comprising~~

detecting a respective echo arrival time of ~~one or each of~~ plural echo paths, based on a reference signal and an echo signal;

calculating as many pseudo-echo signals as the detected arrival times, the number of the pseudo-echo calculations being equal to a member of the detected arrival times;

overlapping the calculated pseudo-echo signals as many times as the detected arrival times to obtain an overall pseudo-echo signal; and

subtracting the overall pseudo-echo signal from the echo signal.

8. (Currently Amended) A recording medium storing a computer-executable program for realizing an echo canceling method to be applied to a full-duplex communication system, the program comprising:

performing an orthogonal transformation processing represented by a fast Fourier transform for a predetermined window length based on a reference signal and an echo signal to obtain an amplitude spectrum and a phase spectrum of each of the reference signal and the echo signal;

detecting one or plural echo arrival times of one or plural echo paths based on the amplitude spectrum of the reference signal and the amplitude spectrum of the echo signal;

calculating as many amplitude spectra of pseudo-echo signals as the detected arrival times;

overlapping the calculated amplitude spectra of the pseudo-echo signals to obtain an amplitude spectrum of an overall pseudo-echo signal;

subtracting the amplitude spectrum of the overall pseudo-echo signal from the amplitude spectrum of the echo signal to obtain an amplitude spectrum of an echo canceling signal; and

performing an inverse orthogonal transformation processing based on the amplitude spectrum of the echo canceling signal and the phase spectrum of the echo signal, followed by an overlap processing, to obtain an echo canceled signal.